ME-11487

PROTON Video

601T

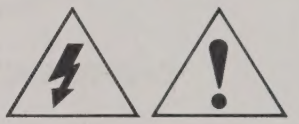
STEREO VIDEO TUNER

OWNER'S MANUAL

601T

PROTON

WARNING: to reduce the risk of fire or electric shock, do not expose this appliance to rain or moisture.



CAUTION
RISK OF ELECTRIC SHOCK DO NOT OPEN

CAUTION: to reduce the risk of electric shock, do not remove cover (or back); no user-serviceable parts inside. Refer servicing to qualified service personnel.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to consitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

CAUTION/ ATTENTION: *TO PREVENT ELECTRIC SHOCK DO NOT USE THIS (POLARIZED) PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

*POUR PRÉVENIR LES CHOCS ÉLECTRIQUES NE PAS UTILISER CETTE FICHE POLARISÉE AVEC UN PROLONGATEUR, UNE PRISE DE COURANT OU UNE AUTRE SORTIE DE COURANT, SAUF SI LES LAMES PEUVENT ETRE INSÉRÉES À FOND SANS EN LAISSER AUCUNE PARTIE À DÉCOUVERT.

ME-11487

IMPORTANT SAFEGUARDS

❶ Operate only on 120 Vac.
❷ Read Instructions- All the safety and operating instructions should be read before the appliance is operated.
❸ Retain Instructions- The safety and operating instructions should be retained for future reference.
❹ Heed warnings- All warnings on the appliance and in the operating instructions should be adhered to.
❺ Follow Instructions- All operating and use instructions should be followed.
❻ Cleaning- Unplug this video product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
❼ Attachments- Do not use attachments not recommended by the video product manufacturer as they may cause hazards.
❽ Water and Moisture- Do not use this video product near water-for example, near a bath tub, wash bowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool, and the like.
❾ Accessories- Do not place this video product on an unstable cart, stand, tripod, bracket, or table. The video product may fall, causing serious injury to a child or adult, and serious damage to the appliance. Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer, or sold with the video product. Any mounting of the appliance should follow the manufacturer's instructions, and should use a mounting accessory recommended by the manufacturer.
❿ Ventilation- Slots and openings in the cabinet are provided for ventilation and to ensure reliable operation of the video product and to protect it from overheating, and these openings must not be blocked or covered. The openings should never be blocked by placing the video product on a bed, sofa, rug, or other similar surface. This video product should never be placed near or over a radiator or heat register. This video product should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.
⓫ Power Sources- This video product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your home, consult your appliance dealer or local

power company.

⓬ Grounding or Polarization- This video product is equipped with a 3-wire grounding-type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding-type plug.

⓭ Power-Cord Protection-Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.

⓮ Outdoor Antenna Grounding- If an outside antenna or cable system is connected to the video product, be sure the antenna or cable system is grounded so as to provide some protection against voltage surges and built-up static charges. Section 810 of the National Electrical Code, ANSI/NFPA No. 70-1981, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna-discharge unit, connection to grounding electrodes, and requirements for the grounding electrode. See Figure 1.

EXAMPLE ANTENNA GROUNDING AS PER NATIONAL ELECTRICAL CODE INSTRUCTIONS

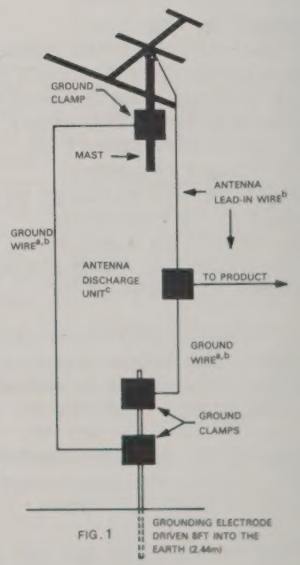


FIG. 1

[a] Use No. 10 AWG (5.3mm^2) copper, No. 8 AWG (8.4mm^2) aluminum, No. 17 AWG (1.0mm^2) copper-clad steel or bronze wire, or larger, as ground wire.

[b] Secure antenna lead-in and ground wires to house with stand-off insulators spaced from 4 feet 1.22m) to 6 feet (1.83m) apart.

[c] Mount antenna discharge unit as close as possible to where lead-in enters house.

⓯ Lightning- For added protection for this video product receiver during a

lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the video product due to lightning and power-line surges.

⓰ Power Lines- An outside antenna system should not be not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can fall into such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits as contact with them might be fatal.

⓱ Overloading- Do not overload wall outlets and extension cords as this can result in a risk of fire or electric shock.

⓲ Object and Liquid Entry- Never push objects of any kind into this video product though openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the video product.

⓳ Servicing- Do not attempt to service this video product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

⓴ Damage Requiring Service- Unplug this video product from the wall outlet and refer servicing to qualified service personnel under the following conditions:

a) When the power-supply cord or plug is damaged.
b) If liquid has been spilled, or objects have fallen into the video product.
c) If the video product has been exposed to rain or water.
d) If the video product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the video product to its normal operation.
e) If the video product has been dropped or the cabinet has been damaged.
f) When the video product exhibits a distinct change in performance- this indicated a need for service.

㉑ Replacement Parts- When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock or other hazards.

㉒ Safety Check- Upon completion of any service or repairs to this video product, ask the service technician to perform safety checks to determine that the video product is in proper operating conditions.

601T

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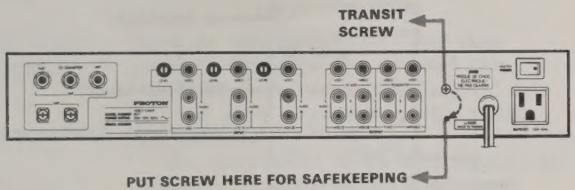
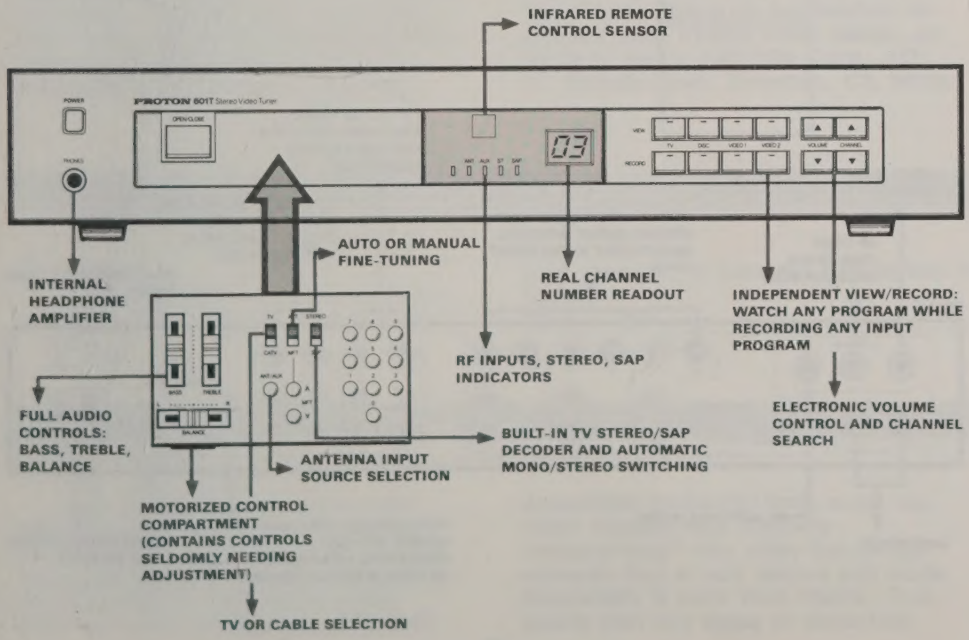
IMPORTANT NOTE TO USER:

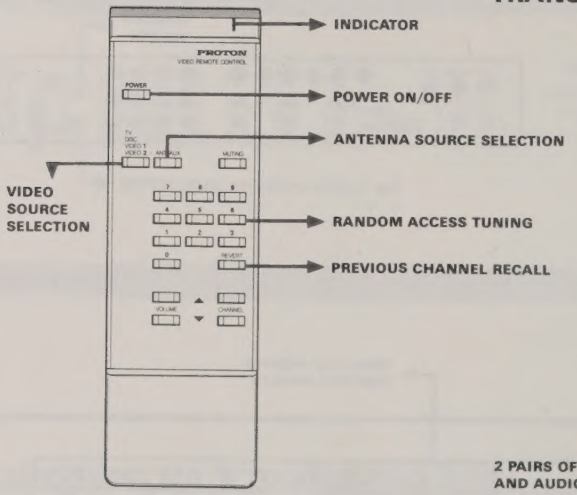
Before operation be sure to remove rear panel transit screw! Otherwise control drawer won't open. Reinstall screw when transporting 601T.

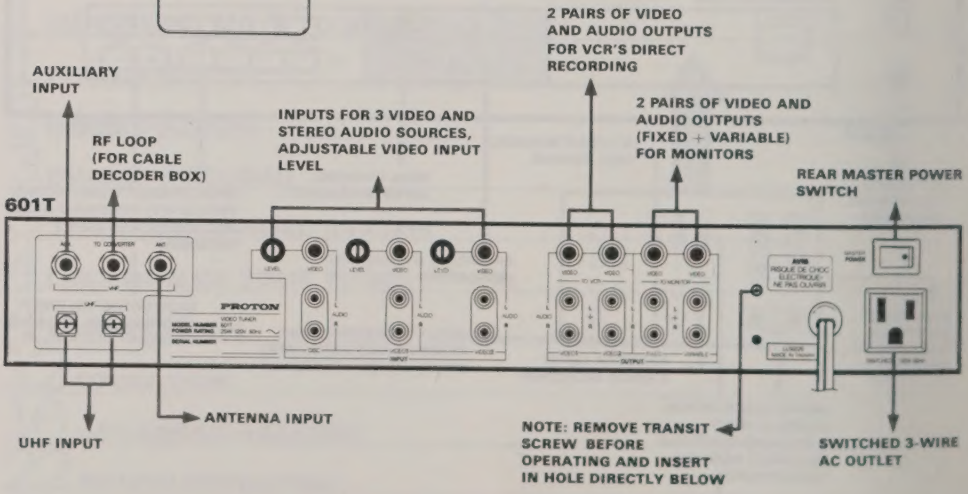


FEATURES


INFRARED REMOTE CONTROL SENSOR
AUTO OR MANUAL FINE-TUNING
INTERNAL HEADPHONE AMPLIFIER
REAL CHANNEL NUMBER READOUT
INDEPENDENT VIEW/RECORD: WATCH ANY PROGRAM WHILE RECORDING ANY INPUT PROGRAM
RF INPUTS, STEREO, SAP INDICATORS
ELECTRONIC VOLUME CONTROL AND CHANNEL SEARCH
FULL AUDIO CONTROLS: BASS, TREBLE, BALANCE
BUILT-IN TV STEREO/SAP DECODER AND AUTOMATIC MONO/STEREO SWITCHING
ANTENNA INPUT SOURCE SELECTION
MOTORIZED CONTROL COMPARTMENT (CONTAINS CONTROLS SELDOMLY NEEDING ADJUSTMENT)
TV OR CABLE SELECTION

601R REMOTE CONTROL TRANSMITTER




AUXILIARY INPUT
RF LOOP (FOR CABLE DECODER BOX)
601T
INPUTS FOR 3 VIDEO AND STEREO AUDIO SOURCES, ADJUSTABLE VIDEO INPUT LEVEL
2 PAIRS OF VIDEO AND AUDIO OUTPUTS FOR VCR'S DIRECT RECORDING
2 PAIRS OF VIDEO AND AUDIO OUTPUTS (FIXED + VARIABLE) FOR MONITORS
REAR MASTER POWER SWITCH
ANTENNA INPUT
UHF INPUT
NOTE: REMOVE TRANSIT SCREW BEFORE OPERATING AND INSERT IN HOLE DIRECTLY BELOW
SWITCHED 3-WIRE AC OUTLET

INTRODUCTION

Your Proton 601T Stereo Video Tuner is the cornerstone of your home audio-video system. It includes all the advances of modern television technology, including true stereo TV reception, to ensure that it will remain "state-of-the-art" for years to come. We believe its performance is superior to any one-piece receiver, because no compromises have been made in its construction.

The advanced performance, sophisticated adjustments and multiple connections of your 601T mean that many connections and fine adjustments --too subtle to be seen or heard on conventional televisions--suddenly have an obvious effect. For this reason, we urge you to read this manual carefully, particularly if this is your first experience with video components.

We have tried to be as complete as possible, but the myriad ways of interconnecting equipment (depending on what equipment you have and what you want it to do) makes it impossible to cover every connection possibility in this manual. If you find that after reading this manual you still have questions, please do not hesitate to contact your Proton video dealer, or write to us at: PROTON Corp, 737 W. Artesia Blvd, Compton, CA 90220.

OWNERS RECORD

The serial numbers are located on the rear panel. Record them here for your records, in case the unit is lost or stolen.

SERIAL NO: _____

YOUR AUDIO/VIDEO SYSTEM

Your Proton 601T contains high fidelity audio and video circuits for broadcast and cable reception, VCR's videodisc players, computers, games, satellite dishes--just about every possible source of signals. The 601T accurately processes both audio and video signals with complete transparency--the video bandwidth exceeds that of any source and audio bandwidth is more than 30kHz. This means that any noise or distortion

present in the input signal will be reproduced as it exists at the source. Your 601T cannot give you professional quality output from a low quality input; nor can it enhance the pictures or sound from a video or audio system of only marginal quality.

The best way to ensure maximum performance from your 601T is to combine it with other high quality components (like the Proton 600M or 602M monitors, for which the 601T is cosmetically and operationally matched). Clean antenna or cable signals, or high-quality program material (eg, videodiscs) will ensure maximum performance from your 601T. Your Proton video dealer can assist you in selecting the best products for your needs.

LOCATION OF YOUR TUNER

The 601T can be placed almost anywhere you desire. As long as proper cables are used (ie, shielded low-capacitance audio cables and 75-ohm coaxial video cables), distances of up to 30 feet will present no problems.

For optimum results, observe these guidelines:

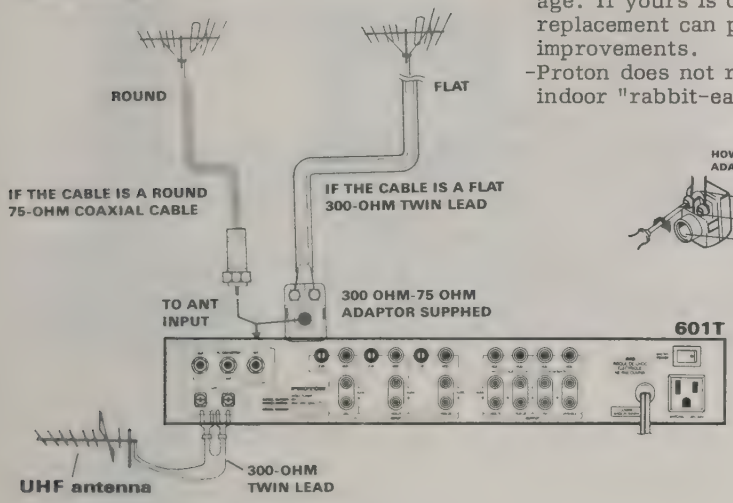
1. The 601T should not be located on top of a monitor, VCR or other components. This could induce noise or hum into its circuits.
2. All cables should be kept at least 6 inches away from AC power lines and sources of electrical noise (air conditioners, light dimmers, florescent lamps, etc.).
3. For best results, connect the 601T to an AC outlet that is not shared with a noise producing electrical device. (air conditioner, etc.)
4. When using a signal-sensing monitor (ie: 602M), it is not necessary to plug the monitor into the 601T's switched receptacle.
5. If interference from other remote controls is experienced, try locating the 601T where it will be out of the direct "line of fire" from other remotes.

CONNECTIONS

Before making any connections:
-Turn off all equipment.
-Connect AC power cord LAST. Make all other connections FIRST.
-Make connections firmly; loose connections cause noise and hum.

ANTENNA/CABLE CONNECTION

VHF antenna

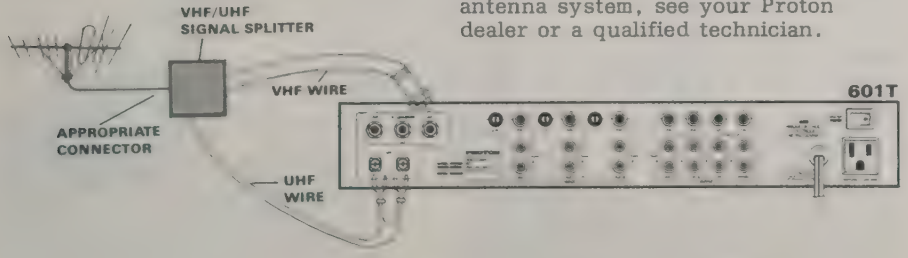


NOTE:

-Outdoor antennas deteriorate with age. If yours is over 5 years old, a replacement can produce noticeable improvements.

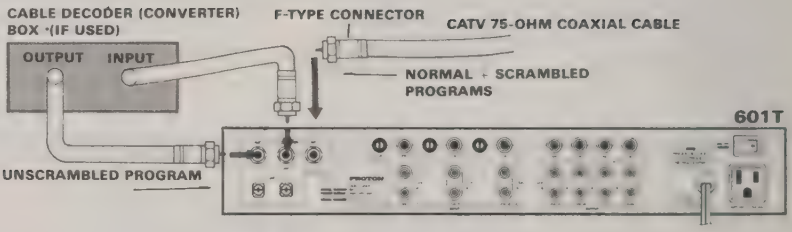
-Proton does not recommend the use of indoor "rabbit-ear" antennas.

Combination VHF/UHF Antenna



Most combination antennas are equipped with a signal splitter. If you need a splitter or a complete antenna system, see your Proton dealer or a qualified technician.

CATV cable connection



NOTE:

1) If none of the channels of your cable system are "scrambled", you do not need a cable box.

2) Most cable decoders put the output signal on VHF channel 3. To view output of decoder, switch 601T to "AUX" input. Leave the decoder set to the scrambled channel (eg: HBO). Please tune 601T to channel 3 (or 4) according to the specified channel output from box-channel 3 (or 4). Whenever it's switched from ANT (non-scrambled programs) to AUX (unscrambled program).

3) We recommend that you consult your cable company to make sure that the cable is properly connected. Particularly, the cable ground should be connected to the grounding system of the building, as close to the point of eable entry as practical.

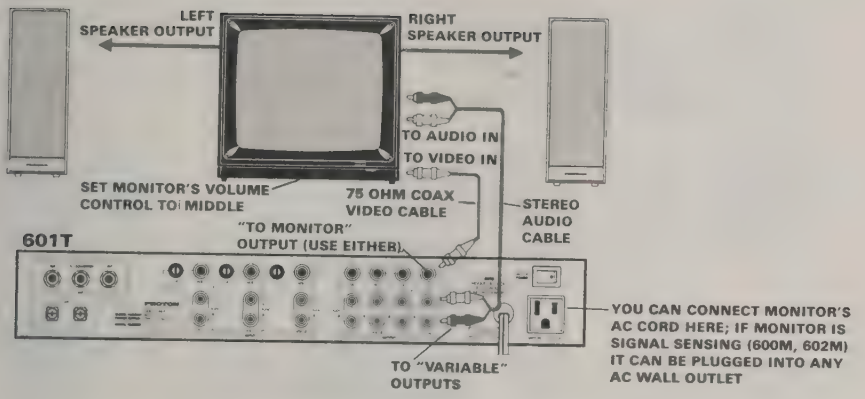
4) If you do not have cable service:

-You cannot, of course, receive CATV channels.

-You can use the AUX input to connect a video game or computer having an PF output signal.

CONNECTION TO MONITOR SHOWN:

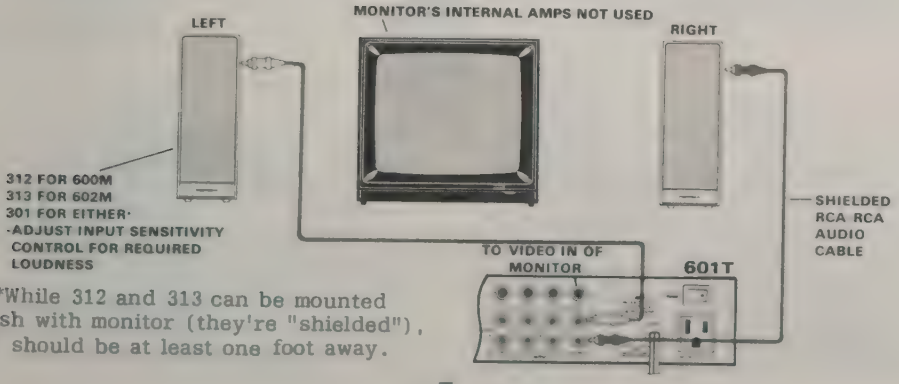
Connection to 600M, 602 using 302, 303 passive speakers (monitor has internal amplifiers).



NOTE: The 601T has direct video and audio outputs only (not RF), and is intended for use with monitors, monitor/receivers, VCR's, etc, which operate with direct inputs. If a conventional TV set is to be used, an optional RF modulator is required.

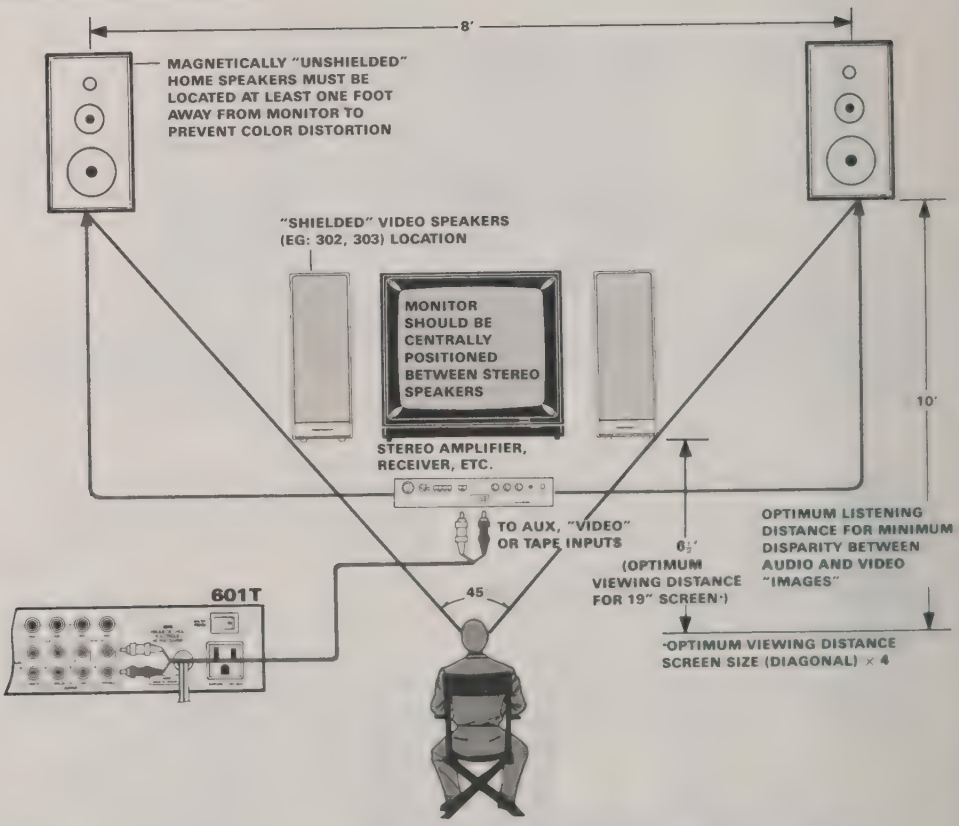
CONNECTION TO AUDIO SYSTEMS

PROTON powered speakers



*While 312 and 313 can be mounted flush with monitor (they're "shielded"), 301 should be at least one foot away.

your existing audio system


8'
MAGNETICALLY "UNSHIELDED" HOME SPEAKERS MUST BE LOCATED AT LEAST ONE FOOT AWAY FROM MONITOR TO PREVENT COLOR DISTORTION
"SHIELDED" VIDEO SPEAKERS (EG: 302, 303) LOCATION
MONITOR SHOULD BE CENTRALLY POSITIONED BETWEEN STEREO SPEAKERS
10'
STEREO AMPLIFIER, RECEIVER, ETC.
TO AUX, "VIDEO" OR TAPE INPUTS
6½'
(OPTIMUM VIEWING DISTANCE FOR 19" SCREEN)
OPTIMUM LISTENING DISTANCE FOR MINIMUM DISPARITY BETWEEN AUDIO AND VIDEO "IMAGES"
601T
45
OPTIMUM VIEWING DISTANCE SCREEN SIZE (DIAGONAL) × 4

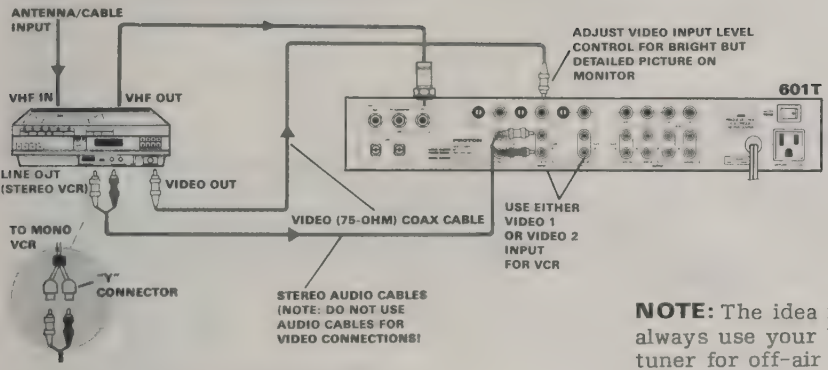
Using 601T's VARIABLE audio outputs as shown permits remote control of volume. Be sure to set your audio system's volume control to a position which provides all the volume you'll want when the 601T is adjusted to maximum, but not so high as to cause speaker damage. If you don't desire remote volume control, use 601T's FIXED (line level) output, then manually adjust volume from your amplifier.

Remember: 601T volume, tone and balance controls have no effect on FIXED outputs.

See "Advanced Reading" section for details on how to hook up your system for simulcasts, stereo cable, etc.

VCR CONNECTIONS

antenna/cable #1

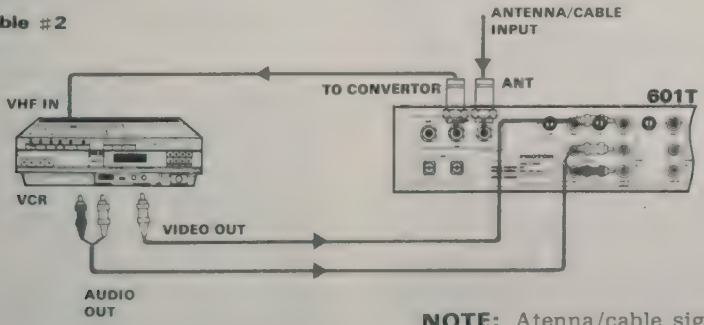

ANTENNA/CABLE INPUT
VHF IN
VHF OUT
ADJUST VIDEO INPUT LEVEL CONTROL FOR BRIGHT BUT DETAILED PICTURE ON MONITOR
601T
LINE OUT (STEREO VCR)
VIDEO OUT
VIDEO (75-OHM) COAX CABLE
USE EITHER VIDEO 1 OR VIDEO 2 INPUT FOR VCR
TO MONO VCR
"Y" CONNECTOR
STEREO AUDIO CABLES (NOTE: DO NOT USE AUDIO CABLES FOR VIDEO CONNECTIONS!

NOTE: The idea is to always use your VCR's tuner for off-air recordings.

• This connection permits:

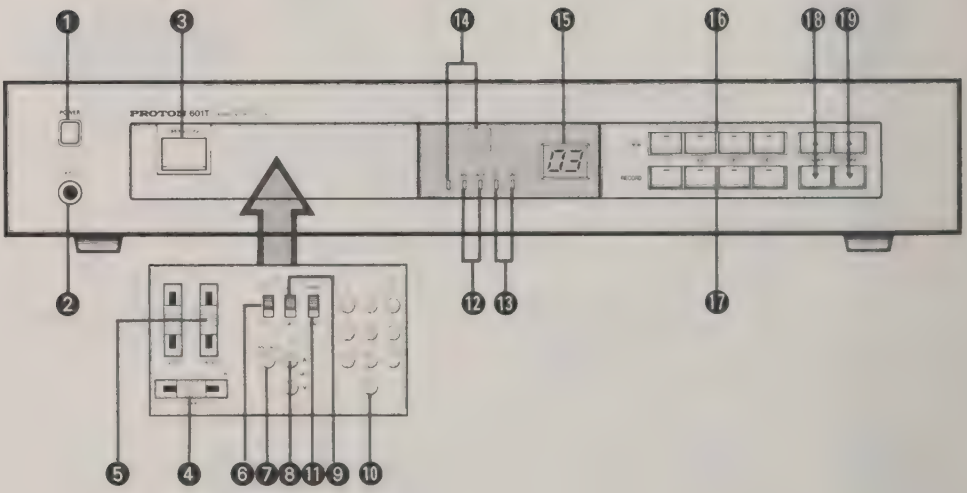
-Unattending recording using your VCR's tuner
-Tape playback through your 601T.
-TV/cable viewing on 601T when VCR is turned off (assuming that antenna signal loops through the VCR when it's off).
-Viewing one channel on your 601T while recording some other source on your VCR.
-Use both VCR and 601T remote controls.

antenna/cable #2



NOTE: Atenna/cable signal does not loop through 601T when power is off.

OPERATION



1. Press ON the rear panel MASTER POWER switch. This switch should be left ON so that the 601T can receive commands from the remote control (601R). Power drain for this standby circuit is negligible.
2. Install batteries in the remote control.
3. Press the POWER button ❶ .
-Upon first powering, the 601T comes up displaying channel 3 , ANTENNA INPUT selected, VOLUME minimum.
-In subsequent powerings, the 601T comes up displaying the last channel tuned, ANT or AUX, VIEW and RECORD always reset to TV, and volume at previous setting.
4. Press control compartment key ❸; draw will electrically extend to reveal controls which you'll adjust infrequently:
❹❺ BALANCE, BASS, TREBLE: middle (detent) is neutral position; they control signals at rear panel VARIABLE

AUDIO OUTPUTS only.

❻ TV/CATV Switch: If you have cable TV, set down; set up for broadcast-only reception (channels 2-83).

❼ ANT/AUX Button: Press to view corresponding input; LEDS ⓬ indicate selected input. Button is duplicated on remote control.

❽❾ AFT/MFT Switch, MFT buttons:
-Normally set to AFT (Automatic Fine Tuning).
-Set to MFT (Manual Fine Tuning) to touch up cable or TV reception by pressing appropriate MFT button ❽ (∧ or ∨).

❿ 0-9 Direct Access Tuning Buttons (duplicated on remote control): Press desired channel number for direct channel selection.

NOTE: The 601T will "understand" single digit entries 2, 3,...9, but will tune even faster when entered as 02, 03... etc.

⓫ STEREO/SAP Switch: Normally set to STEREO to automatically receive any MTS (Multichannel Television Sound) programs being broadcast in your area. The ST LED ⓭ will light when a stereo broadcast is received.

NOTE: Many cable systems are technically unable or are not equipped to carry stereo signals for programs that are being transmitted (ie, broadcast through the air) in stereo. If in doubt,check with your local cable company. If this is the case, you may need to connect an antenna for receiving stereo broadcasts over-the-air (Refer to page 18).

SAP (or Second Audio Program) is transmitted in some areas for bi-lingual broadcasts. To receive, set switch ⓫ down. (The SAP LED ⓭ will light only to show setting of this switch, it does not actually indicate that a SAP program is being received). The SAP channel is always a mono signal, and is inherently of lower fidelity than the main stereo channels.

⓮ Infrared remote control receiver window accepts commands from the remote; the left-most LED lights for a moment when a command has been received.

⓯ SEARCH Up, Down Tuning: Pressing either key (∧ or ∨) tunes the 601T in a sequential manner, skipping over inactive channels. (Keys are duplicated on remote control.)

⓰ The real channel number readout display VHF channels 2-13 and UHF channels 14-83 when TV/CATV switch ❻ is in TV mode.

When TV/CATV switch is in CATV mode, the channel readout shows VHF channels normally, but due to the way cable systems operate, the UHF and cable channels are assigned channel numbers as follows: (no programming or presetting is required)

601T Channel Readout:	01	14	15	16	17	18	19	20	21	22
Corresponding CATV channel:	5A	A	B	C	D	E	F	G	H	I

← cable midband channels →

23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
J	K	L	M	N	O	P	Q	R	S	T	U	V	W	AA	BB	CC	DD

← cable supperband channels → ←

41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58
EE	FF	GG	HH	II	JJ	KK	LL	MM	NN	OO	PP	QQ	RR	SS	TT	UU	VV

← cable hyperband channels →

59	60	61	62	63	64	65	NO CHANNELS	95	96	97	98	99
WW	AAA	BBB	CCC	DDD	EEE	FFF	IN THIS BAND	A-5	A-4	A-3	A-2	A-1

← hyperband → ← subband →

Total channels receivable:

VHF: 12 (2-13) (via antenna or cable)
UHF: 70 (14-83) (via antenna not cable)
CABLE: 57 (sub+midband+superband+ hyperband)
TOTAL: 139

Most cable companies use numbers to designate channel assignments; simply select the same number on the 601T. Some use letters; refer to the above chart for the number to select.

⓭ **VOLUME Up, Down Keys:** To raise/lower the level, press down the ▲/▼ key until you reach the desired level.

If you find that the maximum volume is not enough, turn up the volume control on any powered speakers, monitor with internal amps, preamp, amplifier, or receiver being used (all of which have their own volume control). Also check that remote's "MUTE" is off.

If these keys have no effect on volume, it's because the FIXED outputs (not the VARIABLE) on the rear panel are being used. For the VOLUME keys to operate, the VARIABLE outputs must be used.

5. To view or record TV, DISC, VIDEO 1 or VIDEO 2 inputs.

⓮ **VIEW Selector keys:**

TV: Everytime the 601T is turned on, the TV input is automatically selected, set to the last channel tuned. The volume is also set at whatever level was used before the 601T was turned off.

If you have cable, be sure the TV/CATV switch ❻ inside the control compartment is set to CATV.

Use the ANT/AUX button (❼, 601R) to switch between normal cable programs and decoded programs from your cable box, (see connection section).

DISC: Press to view your connected videodisc player.

VIDEO 1, VIDEO 2: Press to select whatever component is connected to the corresponding rear panel inputs (VCR's, etc).

NOTE: Press 601R remote control button repeatedly to select TV, DISC, VIDEO 1, or VIDEO 2.

⓱ RECORD Selector keys:

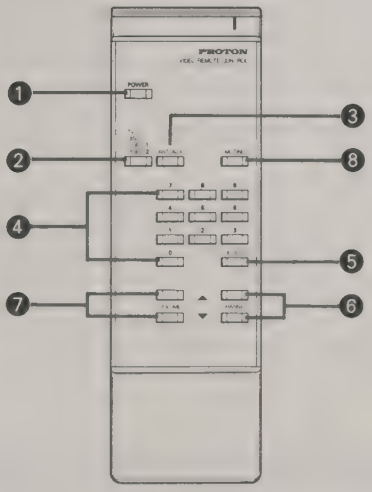
These keys allow you to record any input, regardless of what you have selected to watch with the VIEW keys (or 601R).

The source selected (TV, DISC, VIDEO 1, VIDEO 2) is routed to the "TO VCR" outputs on the rear for recording by a VCR. The signals at these jacks are unaffected by the VOLUME, BASS, TREBLE, or BALANCE controls.

It is possible while recording TV to change channels via the 601R or 601T controls.

6. When you turn off the 601T, the open control compartment will retract automatically. You can also close it by a light tap on its OPEN/CLOSE key. Please do not push the drawer closed or put any obstructions in front of it.

REMOTE CONTROL 601R OPERATION



The handheld remote control of your Proton 601T gives you the ability to control the following functions from a location of up to 20 feet away from your 601T. You'll notice that most controls are repeated on the 601R (except RECORD Selection, BALANCE, BASS, TREBLE, AFT/MFT, STEREO/SAP). They work exactly the same as the 601T's.

❶ POWER: Turn your 601T on or off.

❷ VIDEO SOURCE SELECTION: Press

repeatedly to switch between standard television (RF input), DISC, VIDEO 1 and VIDEO 2 input, respectively.
❸ RF SOURCE SELECTION: Select ANT or AUX RF input.
❹ RANDOM ACCESS CHANNEL SELECTION: Use the 10-button channel selector to randomly access television or cable channels.
❺ REVERT: Press to recall the channel tuned previously. For example, you're watching channel 2 and decide to see what's on 13. You can jump right back to channel 2 if you don't like what's on 13 by pressing REVERT.
❻ CHANNEL UP/DOWN: AFT/MFT in the 601T's control compartment switched to AFT: Use the CHANNEL ∧ (or ∨) button to scan for the closest active station in either direction.

AFT/MFT switched to MFT: Use the CHANNEL ∧ (or ∨) button to tune the next higher (or lower) channel.
❼ VOLUME: Use the VOLUME buttons to control the level of your audio program. Push the "∧" button to increase volume. Push the "∨" button to decrease.
❽ AUDIO MUTING: Push this button to defeat the audio portion of your program. Push the button again and the volume will return to its previous level.

NOTE:
-Use 2 size AA (UM-3) batteries.
-Operable angle is limited within ±30°.
-Replace batteries when range becomes reduced or operation becomes erratic.
-Due to the fact that remote control freqiencies are not standardized, you may find that the 601T reacts to other manufacture's components, and viceversa. If so, physical rearrangement of your components may reduce interaction.

ADVANCED READING

NOTES ON CABLE SYSTEMS

Much confusion surrounds cable television technology and the equipment used to receive it. This is Proton's attempt to clear up some of it, and to explain how to get maximum enjoyment from your equipment.

What does "CABLE-READY" really mean?

-It does not mean that cable television is somehow built into the tuner. The only way to receive cable TV is just that--through a cable, wired into your home by your local cable company.
-"Cable-ready" also does not mean "free HBO". Premium services like Showtime and HBO require a monthly fee in addition to basic cable service. These channels are usually scrambled and require a converter to "decode" (unscramble) the signal for reception. This "decoder box" is provided only

by the local cable company. It is unlawful for any manufacturer to build such decoding circuits into its products.
-Your component may be technically capable of receiving premium channels which are not scrambled or filtered out by your cable compony, but to do without paying the service fee would be unlawful.
-"Cable-ready" really means that a device has the potential to receive cable channels, when they're available.

How many channels do you really need?

We've all come to believe that more is better. "Cable-ready" components that claim to receive 105, 127, 139 or more channels are advertised, but which is "better"? In the case of cable-ready tuners, the number of potential stations one can receive (the advertised number) is not as important as the available number of stations.

Each city or designated area is serviced (for better or worse) by only one cable television firm. The number of stations they offer sets the limit to the number of stations that can be received, regardless of the tuner's specification. Most cable firms offer fewer than 30 channels, with the majority offering between 12 and 25. So technically, most cable-ready tuners that tune at least 105 channels will receive all the channels on most cable systems. Any extra tuning capability is superfluous, unless you move to an area served by a larger system or your current system adds channels (unlikely, as many systems start out large and then cut back on the number of stations offered).

"SCRAMBLED" channels

As discussed, premium channels are usually scrambled (although a few cable systems scramble everything) to prevent unauthorized viewing. A cable converter provided by the cable company must be used (and paid for) to "unscramble" the signal. In this case, a cable-ready tuner's performance becomes hampered in several ways:
1) When one subscribes to a premium channel, the cable company's converter is intended to take over the job of tuning in addition to decoding the premium channel. Unfortunately, the quality of this tuner is inferior to the electronics used in a high performance video tuner.
2) Since most conventional TV sets have only antenna inputs (not direct video inputs like monitors), the cable company's tuner modulates every station onto a "channel 3" output signal, which the common TV set can easily receive. This modulation step degrades the signal once; the necessary demodulation step inside the TV tuner does it again.
3) Finally, the cable company's converter may or may not have a remote. And it always makes the component's remote control useless as the tuner is limited to channel 3 only.

The only compromise solution is to use the converter exclusively for decoding the scrambled channel. Use a splitter to feed the raw cable signal

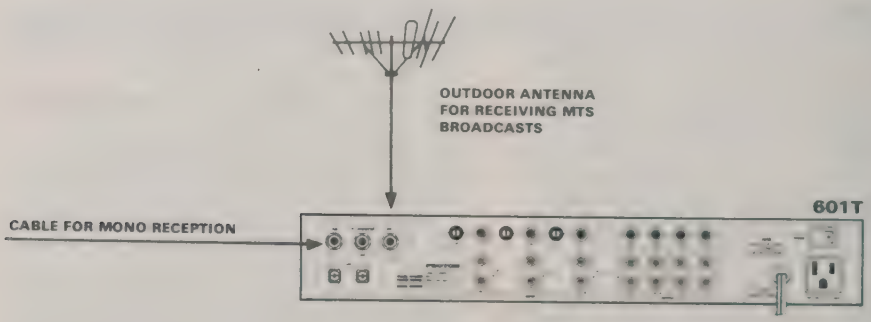
into one RF input of the 601T (ANT). The input can then tune everything but the scrambled channel. Feed the second split through the converter, and into another RF input of the 601T ("AUX"). Use this input (tuned to channel 3) only when you want to see the unscrambled channel. Refer to (pages 6, 9,10) for hookup suggestions.

cable TV and stereo

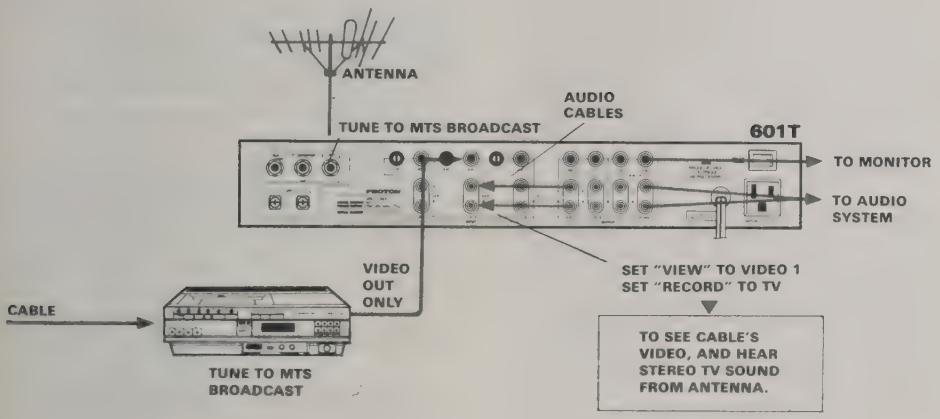
Your local cable company may not be able to provide MTS audio signals (Zenith/dbx system) for a number of reasons:

1. The system's bandwidth limitations "strip-off" the MTS information.
2. The cable company is unwilling to invest in the necessary equipment and modifications required.
3. The MTS information would cause interference in some systems.
4. Even when the MTS signal can be passed through the cable its quality is severely degraded by high distortion and poor separation.
5. The cable company is/will be using the FM simulcast system currently employed for stereo music and movie channels.

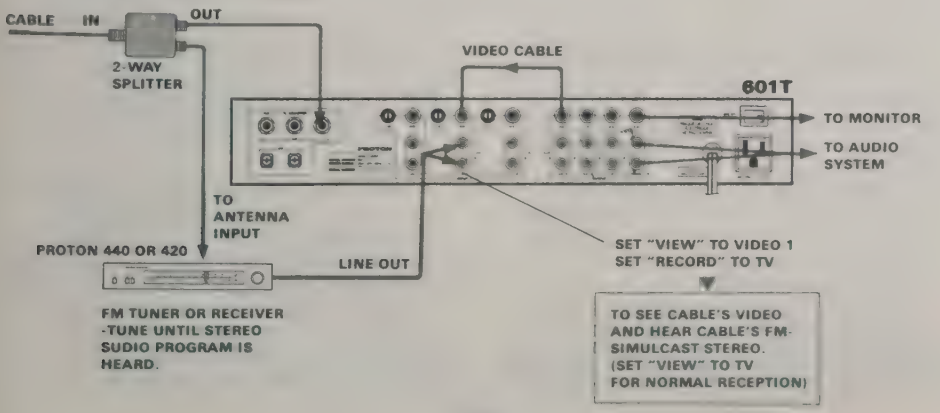
*In cases 1-4, your alternative is to receive MTS broadcasts over the air, using an antenna, as shown below:



If over-the-air pictures are too poor, but you have a VCR, try this hookup:



*In case 5, an FM-simulcast hookup is recommended:


CABLE IN
OUT
2-WAY SPLITTER
VIDEO CABLE
601T
TO MONITOR
TO AUDIO SYSTEM
TO ANTENNA INPUT
PROTON 440 OR 420
LINE OUT
SET "VIEW" TO VIDEO 1
SET "RECORD" TO TV
FM TUNER OR RECEIVER -TUNE UNTIL STEREO SUDIO PROGRAM IS HEARD.
TO SEE CABLE'S VIDEO AND HEAR CABLE'S FM-SIMULCAST STEREO. (SET "VIEW" TO TV FOR NORMAL RECEPTION)

NON-standard cable systems HRC, etc.

The piece of wire known as "cable" has bandwidth limitations (as do the cable system's distribution amplifiers).

Due to this fact, cable companies must fit all the offered VHF, UHF, and cable channels into a bandwidth that the system can accomodate. To do this, they must lower the frequency of available UHF stations and reassign them to channel numbers that don't correspond to the over-the-air channel numbers. (They can do this because the cable is well shielded from all broadcast transmissions.) After they're done, they still have enough room left for additional channels, which depending on there offerings, can be superstations, music videos, movies, etc. They also add the entire FM band on its normal frequency band (88-108MHz), filling in a few blank spots with stereo program audio. The largest cable systems in the country do not begin to fill up the almost 200 potential channels.

However, because of bandwidth limitations again (usually due to older system equipment), some cable systems use a non-standard method for fitting the offered channels into the available bandwidth. These systems use what's called harmonically-related carriers (HRC), which lowers nearly all frequencies by 1.25MHz from the standard system assignment (IRC systems are similar).

Therefore, if you experience any difficulty using the 601T's scan tuning function, it could be due to an HRC cable system, which has channels placed outside the standard "windows" the tuner looks for in the scan mode. If you check with your cable company and they confirm this, use the Manual Fine Tuning controls for best reception. They provide ±2.2MHz adjustment ranges. Alternatively, use the direct access method for tuning (ie, enter the station number on the 601T/601R keypad).

(There are so many different frequency-assignment systems in use by the thousands of cable companies that designing a "universally-compatible" tuner is impossible, but we're working on it.)

NOTES ON STEREO TV

An increasing number of television stations are broadcasting programs with stereo sound. Called Multichannel Television Sound (MTS), the new technology enhances TV viewing by bringing you programs with high fidelity broadcast sound. MTS also provides a third channel called the Second Audio Program (SAP) for use in transmitting a second language or some other soundtrack (including advertising or radio programs). The potential for transmitting surround-sound also exists.

Like any new technology, there will be a maturation period where the "bugs" are worked out. Television stations must modify and upgrade their equipment for stereo processing, while program producers must learn new recording techniques and give more attention to audio quality, an area often overlooked in the past.

We think that you will hear the improvements with time, and may even fondly remember "the early days" when you first heard stereo TV.

FM-simulcast stereo

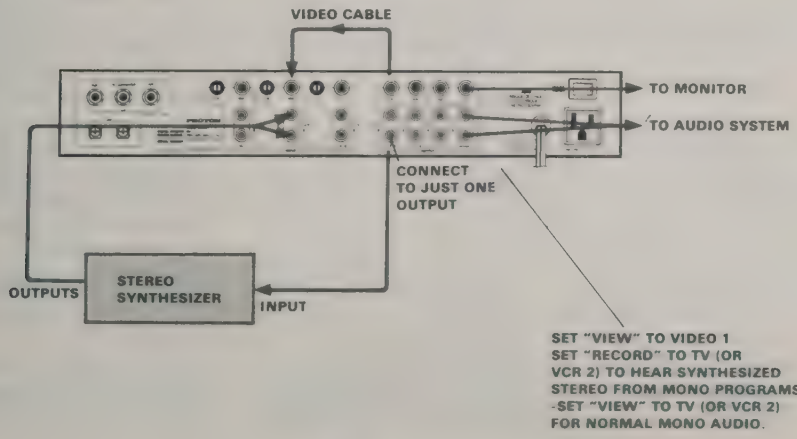
During the transition, expect many stations to continue to use the old FM-simulcast method: a local FM station transmits the stereo audio for the TV station's program.

To receive Simulcast audio, you of course need a stereo FM tuner... you simply listen to your FM tuner or receiver while watching the appropriate channel. A suggested hookup which allows you to switch from normal to simulcast reception and remotely control volume from your 601T is shown in the preceding "CABLE TV AND STEREO" section. And of course you can record the video and simulcast audio on a stereo VCR.

Synthesized stereo

Until local broadcasters convert to real MTS stereo, or until you acquire a stereo VCR, you can get a good illusion of stereo using any stereo simulator now available from a number of manufacturers.

For normal/synthesized switching from your 601T, use this hookup:


VIDEO CABLE
TO MONITOR
TO AUDIO SYSTEM
CONNECT TO JUST ONE OUTPUT
OUTPUTS
STEREO SYNTHESIZER
INPUT
SET "VIEW" TO VIDEO 1
SET "RECORD" TO TV (OR VCR 2) TO HEAR SYNTHESIZED STEREO FROM MONO PROGRAMS.
-SET "VIEW" TO TV (OR VCR 2) FOR NORMAL MONO AUDIO.

TROUBLESHOOTING

If operating difficulties are experienced, check this list of symptoms and possible causes/solutions before requesting service,

SYMPTOM	CAUSE	POSSIBLE SOLUTIONS
1.POWER switch does not function (601R also)	a.AC plug not secure or not in live outlet b.MASTER POWER switch off	a.Check connection, verify outlet is live. b.Check rear panel switch is in "on" position. c.Replace 601R batteries.
2.No video	a.Inactive program source b.Bad video cable	a.Ensure video source is functioning, bypass 601T (plug source directly into monitor) b.Substitute good cable or replace
3.Unstable or too dark /light plcture using VIDEO INPUT	a.Weak signal b.Video input level set too low/high	a.Check video input level control on rear panel. b.Readjust rear panel video input level control for stable picture with optimum contrast.
4.Unstable picture from TV/cable station.	a.Station is experiencing technical difficulties b.Antenna signal weak	a.Check another channel; if OK, station or cable Co. is cause. b.Readjust or replace antenna, reduce number of splitters (antenna amplifiers are not recommended).
5.TV/cable picture bends at top	Signal too strong	Insert TV attenuator (-6dB) between antenna/cable and ANT IN connectors.
6.Black wav lines vertically across picture	Scrambled signal from cable company or UHF subscription-TV channel.	Cable decoder or subscription-TV box required for unscrambling.

SYMPTOM	CAUSE	POSSIBLE SOLUTION
7a. Horizontal lines moving from bottom to top of picture	AC-hum interference from: a. "Hot" cable ground b. Ground loop c. Nearby AC-powered equipment d. Power line noise	a. Ground cable shield to building ground at point of cable entry. b. Reverse AC cords or defeat 3 prong plugs with 3-2 adaptor. c. Reposition equipment. d. Use AC filter, turn off light dimmers, or use unshared AC circuit for power.
7b. Diagonal interference lines	a. Radio frequency interference from CB/ham/FM transmitters, cordless telephone, FM receiver	a. Use appropriate filter or trap on antenna (available from TV stores), or reposition FM tuner /receiver.
8. Snow, noise only	a. Channel is inactive b. Inactive input selected c. Antenna, cable connections bad	Check another channel or TV. b. Check that ANT/AUX is correctly selected. c. Check or replace.
9. Horizontal dotted lines or stripes in picture (snow)	External electrical interference from neon signs, cars, hair dryers, heaters refrigerators, etc.	a. Readjust antenna for minimum noise. b. Use shielded lead-in wire for antenna. c. Use AC filter on appliance generating interference.
10. Double images (ghosts)	Reflections from nearby buildings, bridges, mountains. (multipath)	a. Use highly directional antenna. b. CATV signals generally better. c. Terminate unused splitter ports.
11. No audio	a. Volume set at minimum b. MUTE mode ON. c. Scambled cable or subscription TV channel	a. Push VOLUME key on 601T/601R. b. Check remote control. c. Some systems require decoder box to hear premium channel.
12. No TV Stereo	a. Program not broadcast in stereo	a. Check with local broadcaster, refer to page 18.

SYMPTOM	CAUSE	POSSIBLE SOLUTION
	b. Cable system unable to carry MTS stereo signal c. TV/Cable Co. not using MTS d. Signal too weak e. STEREO/SAP switch at SAP	b. Check with cable company, refer to page 18. c. FM-simulcast system in use, refer to page 18. d. Check/replace antenna, refer to page 18.
13. Hum in audio	a. Bad cables b. Electromagnetic induction c. Ground loop	a. Check/replace. b. Relocate tuner/VCR away from other components, motors, etc. c. Reverse AC cord polarity, defeat ground of 3-prong plug with adaptor.
14. Channel skipping	a. Signal too weak b. HRC cable system	a. Reduce splitters, upgrade antenna. b. Refer to page 20, check with cable Co.
15. Remote control erratic, range decreased	Batteries weak	Check and replace.
16. Poor cable reception	a. Cable signal is too weak b. Cable company supplying poor quality signal, or signal of varying quality (some channels OK).	a. Request cable Co. to increase level, reduce no, of splitters, etc. b. Demand better service, cancel subscription, move.
17. Fuzzy VCR pictures	Slow speed recording; normal low resolution of ½" system.	All VCR pictures are grainy on high resolution systems; use fastest speed (shortest record time) for best results.

SPECIFICATIONS

601T NTSC VIDEO TUNER/PREAMPLIFIER

TUNING RANGE:		VHF 2-13 UHF 14-83 Cable Mid Band (A-5-I) Cable Super Band (J-EEE)
TUNING SPEED (Scan Time):		375 MS/CH
AGC RANGE:		80 dB Typically 90 dB
AUDIO FREQUENCY RESPONSE (VCR DISC):		20 Hz-20 kHz +-3 dB
TONE CONTROLS:		Bass +- 10 dB Treble +- 10 dB
INPUTS:		
	RF 1	VHF 75 OHM UHF 300 OHM
	RF 2	(CABLE) 75 OHM
VIDEO	DISC	1.0 Vp-p Composite Video 75 OHM
	VIDEO 1	1.0 Vp-p Composite Video 75 OHM
	VIDEO 2	1.0 Vp-p Composite Video 75 OHM
AUDIO	DISC	150-300 mV @ 47K OHM 2 Channel (L&R)
	VIDEO 1	150-300 mV @ 47K OHM 2 Channel (L&R)
	VIDEO 2	150-300 mV @ 47K OHM 2 Channel (L&R)
OUTPUTS:		
VIEW	VIDEO 1&2 (To Monitor)	Fixed Level 1.0 Vp-p Composite Video 75 OHM
	AUDIO 1	Variable Level 2 Channel (L&R)
	AUDIO 2	Fixed Level 2 Channel(L&R)
RECORD	VIDEO 1&2 (To VCR)	Fixed Level 1.0 Vp-p Composite Video 75 OHM
	AUDIO 1&2	Fixed Level 2 Channel (L&R)
CONNECTORS:		Video & Audio - RCA Phono Jacks
POWER REQUIREMENT:		AC 120 V 60Hz 25W-Operate 5W-Stand by

DIMENSIONS (WxHxD): 16.5" x 2.56" x 13"
(420mm x 65mm x 330mm)

SHIPPING WEIGHT: 17.6 lbs (8 kg)

• Supplied Accessories

1. 601R Infrared Remote Control
2. RCA-RCA Video coax cables
2. RCA-RCA Stereo Audio cables
1. 300 ohm-to-75 ohm Antenna adaptor
2. 1.5V AA Batteries for 601R

• Optional PROTON Accessories

P301-Unshielded Powered Speaker
P302-Shielded Speakers for 600M
P303-Shielded Speakers for 602M
P312-Shielded Powered Speakers for 600M
P313-Shielded Powered Speakers for 602M
600M-19" Color Monitor
602M-25" Color Monitor
R19A-System Cabinet for 19" Monitor
R25A-System Cabinet for 25" Monitor
420,440,450-FM/AM Tuners
520,540,550-Amplifiers
925,930,940,950-FM/AM Receivers

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